

Appendix C

Solid Waste Markets – Structural Determinants

APPENDIX C



Prepared for King County

Solid Waste Markets – Structural Determinants

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May 2003

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This appendix provides a brief assessment of the extent to which there are barriers to entry, protected technology or methodology, natural monopoly elements, or bargaining powers among customers in four main solid waste markets: collection, processing, transfer, and disposal. A key conclusion of this section is that lack of concentration in transfer and disposal markets, coupled with **vertical integration** into collection markets, can result in prices more like those of a monopolist than a perfect competitor. Lack of competition in the transfer and disposal sectors can result in fewer choices, higher prices, and lower quality of service.

Collection Market

Entry to the collection market in most communities in the United States is easy. All one needs is a business license and a commercial driving license. Capital requirements are quite low – a used truck can cost under \$70,000. Commercial collectors must also provide containers. New ones range in price from \$200 to \$800 per dumpster type container, and from \$2,000 to \$10,000 per roll off container. Used ones are even less expensive. Thus, with an initial capital requirement of under \$200,000, many individuals can and do enter the collection market each year. Entry through purchase of an existing collection firm is also possible, and expansion in this manner is a trademark of the publicly traded solid waste management firms. The only exception to these observations is where government has stepped in to make entry difficult, as, for example in San Francisco, CA, as mentioned previously, or in the State of Washington, where entry can occur only in response to a municipal contract procurement or where there is no service provided by the existing certificated haulers (certificated by the State of Washington).

While there are some economies of scale, these are exhausted at the five to ten truck scale of operations, and there is no evidence that costs continue to fall beyond this point.¹ Thus, collection is not characterized by natural monopoly elements. Individual buyers generally have little bargaining power.

While entry to collection is easy, it is feasible only where there is equal access to disposal. For example, if a community lets a single contract for collection and disposal services, then only firms with access to a disposal site can effectively compete for the business. Vertically integrated companies can effectively forestall entry if large customers want a single contract for collection and disposal services. Communities can mitigate this exercise of market power by decoupling

¹ Stevens, Barbara J. "Scale, Market Structure, and the Cost of Refuse Collection," *The Review of Economics and Statistics*, Vol LX, # 3 (August 1978), p. 445.

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disposal services from collection services. This, for example, is how Seattle procures its collection services, i.e. separately from its disposal services.

In sum, barriers to entry in the collection market in most communities are low, and in these markets the industry has the hallmarks of a perfectly competitive one – there is no protected technology or methodology, the product is homogeneous, and capital entry requirements are low.²

However, in some cases, governments can create barriers to entry into collection. As discussed below, regulations of the Washington Utility and Transportation Commission limit entry into the collection market in all the areas where they regulate collection.

Many local governments fear that if they contract for solid waste services, the bidders will “low ball” the contract (bid below costs) to obtain the business and then raise prices sharply when contract renewal occurs. This is never a problem on the collection side of the business, so long as there is a disposal site available to all bidders, and so long as contracts are not automatically renewed, but rather are rebid. If a firm is foolish enough to bid below cost then it is the local government who benefits, and when the contract is over, a new procurement will lead to another contract (presumably, the firms will not be willing to continue to bid below costs indefinitely). On the disposal side, there is more market power, and there is justification for the fear that an initially low price will be sharply increased at contract renewal time, unless the local government has taken appropriate steps to ensure continued competition in the disposal market.

Processing

Processing of waste includes composting and processing of recyclables. These processes require varying amounts of capital, typically several millions of dollars to construct a materials recovery facility (MRF). MRF operators or composters may have some proprietary techniques, as, for example how fast to blow the air through an air separator, or how high to drop the materials for separation, or how fast to run the conveyor belts. In general, however, these proprietary techniques are relatively unimportant in both composting and in materials recovery. Products are generally undifferentiated - indeed it is the goal of a MRF to produce commodities that are indistinguishable from those produced by other MRF's. Like most other manufacturing establishments, a MRF is likely to have a traditional U-shaped cost function, implying some economies of scale but no natural monopoly characteristics. In sum, while capital requirements for entry into waste processing are higher than for collection, the industry still has no

² *ibid*, p. 439.

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technological barriers to entry, little product differentiation, and relatively small scale economies. The industry is quite competitive.

Transfer

As regulation of solid waste has become increasingly more stringent over the past several decades, many local disposal sites have closed, and municipal solid waste is increasingly frequently transferred via truck or rail to distant disposal sites. Construction of a transfer station to receive refuse collection vehicles and compact the waste into transfer trailer sized loads (typically, twenty to twenty-five tons) would vary according to location and throughput capacity, but would typically not cost more than approximately \$20-\$30 million. Equipment and technology is not proprietary, and the activity is not characterized by monotonically declining average costs. Typically, transfer stations are constructed by firms with a large and steady customer demand, as, for example a municipal contract or to service the collection vehicles owned by the operator of the transfer station (in other words, the transfer station is constructed as a part of vertical integration of the collection company). The product produced is not differentiated. Transfer of waste is increasingly often via rail, as distances to landfills increase. The analysis of truck transfer stations applies to rail and intermodal stations as well.

In sum, while capital requirements are not enormous, technology is non proprietary, the product is undifferentiated, and scale economies are limited, the advantages of procuring a large customer base mean that entry into transfer is unlikely except among large collection firms, especially those owning disposal sites. **The transfer industry is likely to have few competitors, and to operate according to the monopolistic competition model.**

Disposal

Disposal in the United States is largely in landfills that are now required to have environmental safeguards including liners and leachate collection, treatment, and monitoring systems. Depending upon location and scale, establishing a landfill could be expected to require a multi year investment of tens of millions of dollars. The multi year investment is required due to the generally lengthy permitting process. On the disposal side, entry can be made difficult not only by the expense of purchasing, designing, and permitting a facility, but also by the time and expense and risk of overcoming public opposition to siting disposal facilities. There may be significant public protests against siting a landfill or other disposal facility. Waste to energy facilities incinerate municipal waste to generate electricity; construction of such a facility today, assuming a size of about 1000 tons per day capacity, would require several hundreds of millions

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of dollars. As for the landfill, permitting and construction would be expected to be a multi year process. Also, the outcome of the effort would not be assured. New York City, for example, spent millions of dollars attempting to get a permit for a waste to energy facility sited at the Brooklyn Navy Yard. Its efforts came up empty, though, as public opposition caused elected officials to abandon the proposed project.

Capital barriers to entry to disposal are quite high, the product is not differentiated, and there are quite significant economies of scale. Landfill entry occurs as part of vertical integration among large solid waste collection firms. The firms are able to guarantee a flow of waste to their landfills. In sum, there are few rivals in the disposal sector of the solid waste industry. Government regulation of prices charged is not present. **The disposal sector appears to operate according to the monopolistic competition model, with firms earning profits close to the monopolist level.**